Engineering and Safety Science

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Emergency Preparedness

Personal Safety
- Prevent threats to personal safety.
- Create a plan to respond in case of a personal safety incident.

Public Safety
- Discover how to help others in a public safety emergency.
- Create a list of people who help with emergencies.

Natural Disasters
- Develop a home safety plan for a natural disaster.
- Research famous natural disasters.

Workplace Safety

Workplace Safety Basics
- Outline a basic workflow process for a given project from start to finish.
- Summarize the step-by-step processes followed in given field of work.
- Illustrate the manufacturing process in a flow chart.

Safety Awareness
- Interpret caution signs.
- Categorize safety procedures for workplace environments.

Occupational Safety and Health Administration (OSHA)
- Practice the use of national standards.
- Modify OSHA standards for a given workplace scenario.
Engineering Fundamentals

Engineering Technology and Careers
- Research the requirements for careers in engineering that interest you.
- Identify situations in which you would use various engineering programs/software.
- Describe each of the major disciplines within engineering fields, such as civil, chemical, environmental, mechanical, etc.

Engineering Design
- Describe the function of each of the steps in the engineering design process.

Physics
- Illustrate examples in which Newton’s first, second and third laws of motion would apply.
- Identify situations where each of the laws of thermodynamics would apply.

Measurements
- Convert between standard and metric measurements for length, time, mass and temperature.
- Define the terms: dimensional analysis and engineering estimation.
- Understand that all measurements can be expressed as a product of mass, time and length.
- Create an equivalence table between the SI system of units and the English system of units.
- Describe the function of tools used to make measurements including a micrometer, thermometer and scale.
- Explain the difference between accuracy and precision.

Drafting and Spatial Data
- Complete an engineering draft of a project, complete with isometric and orthogonal views.
- Compare the various ways of manipulating a drawing (translation, rotation, scaling).

Transportation

Modes of Transportation
- Connect modes of transportation to an engineering concept.
- Provide an example of the major function of the different modes of transportation.

Car and Bicycle Mechanics
- Explain each car/bicycle part’s major purpose.
- Describe how different parts function together.
Engineering Safety Science Outcomes 3-5 Years

Engines
- Compare and contrast different engines.
- Explain the combustion cycle for different types of engines.
- Classify engines as 2-cycle or 4-cycle.

Machines
- Solve a simple machines malfunction.

Workplace Building Trades and Home Repair
- Describe the career preparation for the professionals involved with building a house.
- Create elements of a business plan for a specific building trade to include an example contract, advertisement means and example workday schedule.

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating. UT Extension provides equal opportunities in programs and employment.